REMARKS

Reconsideration and allowance of the above-referenced application are respectfully requested. Claims 1-7 are unchanged and remain pending in the application.

The specification has been amended to correct obvious errors.

Claims 1 and 4 stand rejected under 35 USC §102(b) in view of U.S. Patent No. 5,917,865 to Kopmeiners et al. This rejection is respectfully traversed, as the Examiner is applying an unreasonable interpretation of the claims and the applied reference.

A. No Disclosure or Suggestion of the "Initial Gain Mode"

A1. The Claims

Each of the independent claims 1 and 4 specify an arrangement for determining an optimum gain for a received wireless signal relative to one of an initial gain value, or a minimum gain value. In particular, the received wireless signal is amplified by an initial gain value to a first power value: the initial gain value is set for supply of the received wireless signal to an input circuit having a prescribed input range.

Each of the independent claims 1 and 4 also explicitly specify a logical procedure for which there are only two possible settings for determining the optimum gain, depending on the first power value:

1) if the first power value of the received wireless signal does not exceed the prescribed input range, the optimum gain is determined relative to the initial gain value and the first power value ("initial gain mode"); however,

2) if the first power value of the received wireless signal does exceed the prescribed input range, the optimum gain is determined based on setting the gain to a minimum gain value ("minimum gain mode").

Hence, if the first power value of the received wireless signal (amplified by the initial gain value) does not exceed the prescribed input range, then no further change in amplification of the received wireless signal is necessary, as the optimum gain can be determined relative to the initial gain value and the first power value. As described in the specification with respect to Figs.

2 and 3, the gain calculator 116 determines the optimum gain in step 208 by calculating the optimum gain based on the existing gain (in this case the initial gain value) and the first power value if in step 204 the received wireless signal does not exceed the prescribed input range (i.e., there is no saturation of the amplified signal) (see page 8, lines 1-3). In other words, the specification describes that the "determining the optimum gain" is not performed by further changes in amplification of the received wireless signal, **but by computing the optimum gain based on the first power level created by amplifying the received wireless signal *at the existing gain*.**

Hence, the claimed "determining an optimum gain for the received wireless signal relative to the initial gain value and the first power value" enables immediate computation of the optimum gain *based on the first power level of the received wireless signal at the initial gain value*, with no further change needed in the amplification of the received wireless signal, if the first power value of the received wireless signal does not exceed the prescribed input range.

In fact, the explicit claim language requires "determining the optimum gain" with no further change in the amplification of the received wireless signal, because the claims specify determining the optimum gain "relative to the initial gain value and ***the first power value***." In other words, the recital of "the first power value" in singular form (as opposed to the plural "value*s*") requires that the optimum gain can be determined from a single power value, namely the first power value generated by amplifying the received wireless signal by the initial gain value.

Hence, the claimed "determining an optimum gain" cannot be so broadly construed as to encompass additional changes to the gain in amplifying the received wireless signal; rather, the broadest reasonable interpretation, consistent with the specification, must be interpreted as determining the optimum gain based on the power ***level*** of the received wireless signal having been amplified ***at the existing gain***. The Examiner is respectfully reminded that "claims are not to be read in a vacuum, and limitations therein are to be interpreted in light of the specification in giving them their 'broadest reasonable interpretation.'" MPEP § 2111.01 at 2100-48 (Rev. 3,

Aug. 2005) (quoting *In re Marosi*, 710 F.2d 799, 802, 218 USPQ 289, 292 (Fed. Cir. 1983)(emphasis in original)).

A2. The §102 Rejection and the Applied Reference

The rejection fails to demonstrate that Kopmeiners et al. discloses nor suggests the claimed "if the first power value of the received wireless signal does not exceed the prescribed input range, determining an optimum gain for the received wireless signal relative to the initial gain value and the first power value". In fact, Kopmeiners neither discloses nor suggests this claimed feature.

The rejection cites col. 5, lines 19-24 as a disclosure of "determining if the power of the signal does not exceed the prescribed input range, then determining an optimum gain for the received wireless signal relative to the initial gain and **power** ***values***". However, as described above the claim language explicitly specifies that the optimum gain can be determined "relative to" the ***single*** initial gain value and the ***single*** "first power value", where "value" is singular, nor plural.

Hence, the rejection is legally deficient because it fails to address the claimed feature of determining the optimum gain relative to the "first power value" in the singular form, avoiding the necessity of determining an optimum gain relative to ***plural*** power values.

In fact, Kopmeiners et al. fails to disclose "determining the optimum gain" relative to the singular power value, because Kopmeiners et al. describes at col. 5, lines 19-24 that even if a peak is within the dynamic range of the ADC 120, the gain is ***still adjusted*** in additional increments:

> If the peak signal is within the dynamic range of ADC 120 (i.e., some output value between the upper and lower limits), ***AGC 130 makes a coarse adjustment of the gain control signal*** of VGA 110 in order to set the output of VGA 110 to approximately the target peak level (Steps 220 et seq.). ***This coarse adjustment will be explained below in greater detail.***

Moreover, the Examiner is providing a tortured interpretation of the reference, because the portion relied on by the Examiner (col. 5, lines 19-24) belies the fact that the reference actually <u>does not</u> specifically disclose determining the optimum gain "relative to the initial gain value and the first power <u>value</u>" in the case "if the first power value ... does not <u>exceed the prescribed input range</u>" for the simple reason that, if the initial gain is insufficient, then the reference teaches that <u>additional gain needs to be supplied</u>:

> The first stage of the algorithm is a search mode in which the gain of VGA 110 is varied rapidly in order to bring the strength of the amplified signal within the dynamic range of ADC 120. During the search phase, peak detector 132 reads the peak signal level during an initial, relatively short time interval using a peak-hold function (Step 205). The sampled peak signal is then read by analyzer 134, which determines whether the peak signal is within the dynamic range of ADC 120 (Step 210). If too much gain is applied, ADC 120 will be driven to its upper limit (saturation). ***If insufficient gain is supplied, ADC 120 will be at its lower limit (i.e., zero signal energy output).*** If the peak signal is within the dynamic range of ADC 120 (i.e., some output value between the upper and lower limits), AGC 130 makes a coarse adjustment of the gain control signal of VGA 110 in order to set the output of VGA 110 to approximately the target peak level (Steps 220 et seq.). This coarse adjustment will be explained below in greater detail.
>
> If the sampled peak signal level initially read by peak detector 132 is ***not within the dynamic range*** of ADC 120, AGC 130 adjusts the gain control signal of VGA 110 according to an established search algorithm (Step 215). The process of sampling the signal peak level using a peak-hold function, determining if it is within the dynamic range of ADC 120, and adjusting gain according to the search algorithm if it is not, ***is repeated until the peak signal level is within the operating range of ADC 120 (i.e., loop through Steps 205, 210 and 215)***.
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> (Col. 5, lines 8-35)

This quoted portion of Kopmeiners et al. demonstrates that the reference does <u>not</u> disclose the claimed "if the first power value of the received wireless signal ***does not exceed the prescribed input range***, determining an optimum gain for the received wireless signal ***relative to the initial gain value*** and the ***first power <u>value</u>***". Rather, Kopmeiners et al. requires <u>additional adjustment of the gain, *even if the first power value does not exceed the prescribed input range*</u>, because Kopmeiners et al. requires the first power value to be <u>within the dynamic range</u> (i.e.,

does not exceed the range nor fall below the range) before the "stage of the algorithm" can exit from search mode to coarse mode, where further adjustments to the gain will be made.

As noted by the Examiner on pages 2-3 of the Final Action, in Kopmeiners et al. "the parts of the gain control technique are conducted in a ***loop fashion***" (see para. 2) and has an "iterative nature" where "the process is looped back". As shown in Figures 2A, 2B, and 3, Kopmeiners et al. repeatedly adjusts the gain at steps 215, 230, and 260 during search, coarse adjust, and fine adjust stages, with repeated iterations to locate an optimum gain.

Moreover, the "search algorithms" in the above quote of Col. 5, lines 8-35 are described by Kopmeiners et al. as either a bisection search (col. 5, lines 36-63) requiring several iterations of gain adjustment (col. 5, lines 58-63), or incremental/decremental steps that are illustrated in Fig. 3 as requiring multiple adjustments to the gain:

> Other search algorithms are also known, including the search algorithm depicted in FIG. 3. FIG. 3 depicts a search algorithm which ***moves through the dynamic range*** of the analog-to-digital converter ***in incremental*** (or decremental) ***steps*** equal to the dynamic range of the receiver, in this instance, 20 dB. ***The search mode ends when the received signal comes within the dynamic range of ADC 120***. When peak detector 132 and analyzer 134 determine that a signal peak has been received that is within the range of ADC 120, analyzer 134 compares the sampled signal peak level with an optimum target peak level. The target peak level may be predetermined by control signals received from control circuitry (not shown) coupled to AGC 130.

Hence, Kopmeiners et al. cannot disclose or suggest determining an optimum gain from a single power value, based on the first power value not exceeding the prescribed input range. Hence, the rejection should be withdrawn because it fails to demonstrate that the applied reference discloses each and every element of the claim. As specified in MPEP §2131: "'A claim is anticipated only if each and every element as set forth in the claim is found, either expressly or inherently described, in a single prior art reference' *Verdegaal Bros. V. Union Oil Co. of California,* 814 F.2d 628, 631, 2 USPQ2d 1051, 1053 (Fed. Cir. 1987). ... 'The identical invention must be shown in as complete detail as is contained in the ... claim." *Richardson v. Suzuki Motor Co.*, 868 F.2d 1226, 1236, 9 USPQ2d 1913, 1920 (Fed. Cir. 1989)." MPEP 2131 (Rev. 3, Aug. 2005, at p. 2100-76).

Although the claims are interpreted as "open ended" the applied reference must include each and every element in the manner claimed, including the claimed determining an optimum gain from a single power value, based on the first power value not exceeding the prescribed input range. [1] Kopmeiners et al. fails to disclose this feature, and any assertions by the Examiner to the contrary are insufficient to overcome the deficiencies in the applied reference. "A prior art patent is a reference only for that which it teaches." *Corning Glass v. Sumitomo Electric*, 9 USPQ2d 1962, 1970 (Fed. Cir. 1989).

For this reason alone the §102 rejection should be withdrawn.

B. No Disclosure or Suggestion of the "Minimum Gain Mode"

B1. The Claims

Each of the independent claims 1 and 4 also specify a minimum gain mode, namely "if the first power value of the received wireless signal exceeds the prescribed input range, determining the optimum gain for the received wireless signal based on setting the gain to a minimum gain value".

Hence, if the first power value of the received wireless signal (amplified by the initial gain value) exceeds the prescribed input range, then the optimum gain can be determined based on setting the gain to a minimum gain value, eliminating the necessity for any further change in amplification of the received wireless signal. As described in the specification with respect to Figs. 2 and 3, the gain calculator 116 determines the optimum gain in step 208 by the gain selector 114 setting in step 206 the gain to a minimum ($G=G_{MIN}$), and the amplifier 110

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[1] "Anticipation requires the presence in a single prior art reference disclosure of each and every element of the claimed invention, arranged as in the claim." *Lindemann Maschinenfabrik GmbH v. American Hoist & Derrick Co.*, 221 USPQ 481, 485 (Fed. Cir. 1984). Hence, it is not sufficient that a single prior art reference discloses each element that is claimed, but the reference also must disclose that the elements are arranged as in the claims under review. *In re Bond*, 15 USPQ2d 1566, 1567 (Fed. Cir. 1990) (citing *Lindemann Maschinenfabrik GmbH*).

outputting the new amplified signal (P_1) (having been amplified at the new gain ($G=G_{MIN}$)) to the gain calculator 116 (page 7, lines 27-33).

As described above in section A1, the specification describes that the "determining the optimum gain" is not performed by further changes in amplification of the received wireless signal, **but by computing the optimum gain based on the power level created by amplifying the received wireless signal *at the existing gain*.** Hence, the claimed "determining an optimum gain" cannot be so broadly construed as to encompass additional changes to the gain in amplifying the received wireless signal; rather, the broadest reasonable interpretation, consistent with the specification, must be interpreted as determining the optimum gain based on the power ***level*** of the received wireless signal having been amplified ***at the existing gain***.

Further, the specification describes that the "minimum gain level" is, in fact, a minimum gain value that is to be used for higher power received wireless signals:

> If the saturation detector 112 detects that the first power value 106 exceeds the prescribed input range for the input circuit, indicating the received wireless signal 100 has a high input level, the initial gain selector 114 resets the gain 104 to a minimum gain value (e.g., by setting and outputting a flag (F) 115 to the initial gain selector 114) , enabling the internal calculator 116 to determine the optimum gain 102 ***based on the initial gain selector 114 setting the gain to a minimum gain value (G_{MIN})***. In other words, the internal calculator 116 determines the optimum gain 102 based on whether the received wireless signal 100 has a low input level or a high input level based on the absence or presence of saturation detected by the saturation detector 112, respectively. Consequently, ***the internal calculator 116 is able to initiate computations based on determining that the detected saturation corresponds to a signal having a high input level***, enabling the automatic gain controller to obtain the [desired] gain 102 within two steps, namely within [] about two execution cycles of the state machine.
>
> (Page 7, lines 10-20).

Hence, the broadest reasonable interpretation of "minimum gain value" cannot be inconsistent with the specification, which specifies that the gain is set to a minimum level ($G=G_{MIN}$) in order to initiate optimum gain calculations for a signal determined (based on the first power value exceeding the prescribed input range causing "saturation") to have a high input level.

Nor can the broadest reasonable interpretation of "minimum gain value" be inconsistent with the interpretation those skilled in the art would reach: even Kopmeiners et al. acknowledges that a "minimum gain" refers to a gain setting that has no lower boundary (i.e., a ***"zero gain setting***"):

> In the bisection method, an initial gain ***range*** having a maximum gain and ***a minimum gain*** is established in which it is known the measured signal must be found (e.g., ***zero gain setting*** and maximum gain setting).
>
> (Col. 5, lines 41-44).

Hence, the broadest reasonable interpretation of "minimum gain value" cannot be inconsistent with te specification and Kopmeiners et al., both of which specify "minimum gain" as the lowest gain setting that is available <u>for the amplifier</u>.[2]

As described in further detail below, although Kopmeiners et al. recognizes the *existence of* a minimum, Kopmeiners et al. does not disclose ever *setting* the gain to a minimum, as claimed.

B2. The Applied Reference

Kopmeiners et al. provides no disclosure or suggestion whatsoever of the claimed determining the optimum gain for the received wireless signal, ***based on <u>setting the gain to a minimum gain value</u> if the first power value of the receive wireless signal exceeds the prescribed input range***, as claimed. As admitted by the Examiner, Kopmeiners et al. relies on a

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[2]"During patent examination, the pending claims must be 'given their broadest reasonable interpretation consistent with the specification.'" MPEP §2111 at 2100-46 (Rev. 3, Aug. 2005) (*quoting In re Hyatt*, 211 F.3d 1367, 1372, 54 USPQ2d 1664, 1667 (Fed. Cir. 2000)).

"The broadest reasonable interpretation of the claims must also be consistent with the interpretation that those skilled in the art would reach." MPEP §2111.01 at 2100-47 (Rev. 3, Aug. 2005) (*citing In re Cortright*, 165 F.3d 1353, 1359, 49 USPQ2d 1464, 1468 (Fed. Cir. 1999)).

"gain control technique [] conducted in a loop fashion" and that in the "iterative nature of Kopmeiners et al.'s system ... the process is looped back to step 205."

The Examiner is applying an unreasonable interpretation of the claimed "determining an optimum gain ... based on setting the gain to a minimum gain value" by suggesting that this claimed feature would include repeated iterations of <u>changing the gain of the received wireless signal</u>; as described above, however, such an interpretation would be unreasonable because the claim specifies that the optimum gain is determined "based on ***setting the gain to a minimum gain value***," and any further changes in the gain would result in the optimum gain no longer being based on "***setting*** the gain to a minimum gain value" but would be based on <u>another</u> gain value. As shown above, the Examiner's interpretation also is inconsistent with the specification and the interpretation of "minimum gain" as interpreted by one skilled in the art (e.g., Kopmeiners et al. at col. 5, lines 41-44)).

Further, the Examiner provides a tortured interpretation of the reference. The Examiner cites col. 2, lines 57-65 and asserts on page 3 that "by *decrementing* the gain value, Kopmeiners et al. is *setting the gain value* to -20dB, which is clearly the ***minimum gain value of its system***." This argument has <u>no factual basis</u>, because Kopmeiners et al. describes decrementing in -20dB increments *toward* a minimum, but not <u>setting</u> the gain <u>to a minimum</u>:

> In one embodiment of the present invention, in the search mode, the gain signal adjustment subcircuit adjusts the gain signal as a function of the dynamic range of the digital circuit. In a more specific embodiment, the gain signal adjustment subcircuit **adjusts the gain signal by an amount that <u>at most</u> approximates the dynamic range of the digital circuit**. For example, if the dynamic range of the digital circuit is 20 dB, the gain signal is **<u>adjusted</u>** (either downward or upward) **<u>in steps of approximately 20 dB</u>**.

(Col. 2, lines 57-65).

One skilled in the art would never consider the disclosed ***adjustment*** of the gain signal, *either downward or upward* ***in steps of approximately 20dB*** as a teaching of "setting the gain to a ***minimum gain value***", as claimed.

Hence, Kopmeiners et al. provides no disclosure or suggestion of "determining the optimum gain for the received wireless signal based on setting the gain to a minimum gain value", and any assertions by the Examiner to the contrary are insufficient to overcome the deficiencies in the applied reference. "A prior art patent is a reference only for that which it teaches." *Corning Glass v. Sumitomo Electric*, 9 USPQ2d 1962, 1970 (Fed. Cir. 1989).

Hence, the rejection should be withdrawn because it fails to demonstrate that the applied reference discloses <u>each and every element of the claim</u>. It is not sufficient that a single prior art reference discloses each element that is claimed, but the reference <u>also</u> must disclose that the elements <u>are arranged as in the claims under review</u>. *In re Bond*, 15 USPQ2d 1566, 1567 (Fed. Cir. 1990) (citing *Lindemann Maschinenfabrik GmbH*).

For this reason alone, the §102 rejection should be withdrawn.

It is believed the dependent claims are allowable in view of the foregoing.

In view of the above, it is believed this application is in condition for allowance, and such a Notice is respectfully solicited.

To the extent necessary, Applicant petitions for an extension of time under 37 C.F.R. 1.136. Please charge any shortage in fees due in connection with the filing of this paper, including any missing or insufficient fees under 37 C.F.R. 1.17(a), to Deposit Account No. 50-0687, under Order No. 95-535, and please credit any excess fees to such deposit account.

Respectfully submitted,

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